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NASA Ames Robots Explore Lava Flow in Simulated Lunar Mission

MOFFETT FIELD, Calif. – NASA robots soon will begin exploring the dusty, rocky terrain of a barren desert on Earth much like the moon. Scientists and engineers will study the images and information the robots gather to help plan where humans should venture next.

To simulate robots scouting on the lunar surface before a human space crew arrives, the "K10 Red" and "K10 Black" robots developed at NASA Ames Research Center, Moffett Field, Calif., will perform site surveys of the Black Point Lava Flow in Arizona June 14 - June 26, 2009. Scientists and mission operators will remotely control the K10s from the NASA Lunar Science Institute (NLSI) at NASA Ames and collect scientific data using the K10's cameras and 3-D laser scanners. After the robots have completed their exploration, the mission team will use the images and 3-D terrain models taken by the K10s to plan a simulated astronaut mission in August.

Media interested in interviewing the science and mission operations teams as they work at the NLSI should contact Rachel Prucey at rachel.l.prucey@nasa.gov or 650-604-0643 by Wednesday, June 24, 2009 to schedule interviews.

"This field test is important for understanding how robots can help future astronauts be more productive on the moon," said Terry Fong, principal investigator of the robotic recon experiment and director of the Intelligent Robotics Group at NASA Ames. "We're using the K10 robots to study how scouting can improve planning for human missions and improve lunar science."

As part of the two-week experiment, the K10 robots will navigate an area of Arizona scientists have chosen as a simulation of the Rupes Recta or "Straight Wall" fault seen on the moon. Black Point Lava Flow's wide variety of surface features, size (nearly 10 miles wide) and relative remoteness make it ideal for simulated lunar missions, according to project team scientists.

Engineers and scientists will use the field experiments to determine the kinds of instruments, data communication and navigation capabilities necessary to make a successful robotic reconnaissance. Scientists know that robots can make discoveries useful to scientists on Earth, as exemplified by the Mars Exploration Rovers. Engineers predict that during the first three years of human missions to the moon, humans will spend less than 10 percent of the time on the surface, while robots could be used more than 90 percent of the time.

Team members believe robotic scouting missions can reduce the amount of uncertainty a human crew encounters when conducting extravehicular activities. Providing mission planners a lunar "road map" can improve the quality and amount of science data collected on future missions to the moon. Scientists say this will help determine what lunar features might be of greatest scientific interest, as well as help identify resources and potential hazards.

The June field test is part of the 2009 Desert Research and Technology Studies (Desert RATS) project, which will send additional robots, human-operated rovers and lunar planners from NASA centers across

the country to the Black Point Lava Flow in August and September. During that experiment, Desert RATS will perform a simulated 14-day human mission to the moon.

NASA's Langley Research Center, Hampton, Va.; Johnson Space Center, Houston; Jet Propulsion Laboratory, Pasadena, Calif.; Ames Research Center; Glenn Research Center, Cleveland; and Kennedy Space Center in Florida are participating in the Desert RATS.

The K10 robots are part of the Human Robotic Systems project under NASA's Exploration Technology Development Program (ETDP), which develops advanced technologies and capabilities for lunar exploration. The ETDP is based at NASA's Langley Research Center, Hampton, Va.

For more information about NASA's plans lunar surface analogs, visit:

<http://www.nasa.gov/exploration/home/analog.html>

For more information about the robotic experiment at Black Point Lava Flow, visit:

<http://lunarscience.nasa.gov/roboticrecon>

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